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DECUS NO.	8-477
TITLE	RIBIER - A PROGRAM FOR THE PDP-8/I ENABLING THE TRANSITION FROM THE PS/8 SYSTEM TO THE PAPER TAPE SYSTEM
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SOURCE LANGUAGE	PAL-8

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RIBIER
A PROGRAM FOR THE PDP-8/I ENABLING THE TRANSITION
FROM THE PS/8 SYSTEM TO THE PAPER-TAPE SYSTEM

DECUS Program Library Write-up

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During the development of programs for real-time applications written in PAL III or PAL-8 assembly language it can easily happen that parts of the program are destroyed during the test when an error is encountered, e. g., when a wrong jump address is used and data are interpreted as instructions. Because there is no possibility of protecting parts of the memory, the top pages in field 0 and field 1 can also be altered. When new binary files are loaded with the PS8 loader program, the DECtape units must be on all the time, e. g., to use the ODT facility. If an error as mentioned occurs, it can happen that the directory of the tapes or even the content of files is altered, depending on the error, which is of course very annoying. At best the whole bootstrap procedure to load the PS8 system must be executed.

I therefore found it easier to use paper tapes for the object programs during the debugging phase. To enable a comfortable change to the conventional paper tape system, I designed the program "RIBIER," which can be called from a DECtape. The aim of this program is to load the high speed rim loader and the bin loader in both fields in their normal position on the top page. Since it is not possible to save programs directly in these regions under the PS8 system, a relocation technique is used. The loaders are saved on the page 3600-3777 instead of 7600-7777 and relocated in the correct position afterwards. Finally all the core up to address 7477 is cleared. This gives the advantage that every attempt of testing a program has the same initial conditions. The flow chart in Fig. 1 shows the idea of the program. The version DEC-08-LBAA-D, May 1967 of the bin loader has been used.

Because the loaders are now doubled, it is quite possible that one loader is still working when an error of the mentioned kind occurs. Therefore it is possible to reload the program (or the PS8 bootstrap routine) without the need to toggle in instructions on the console.

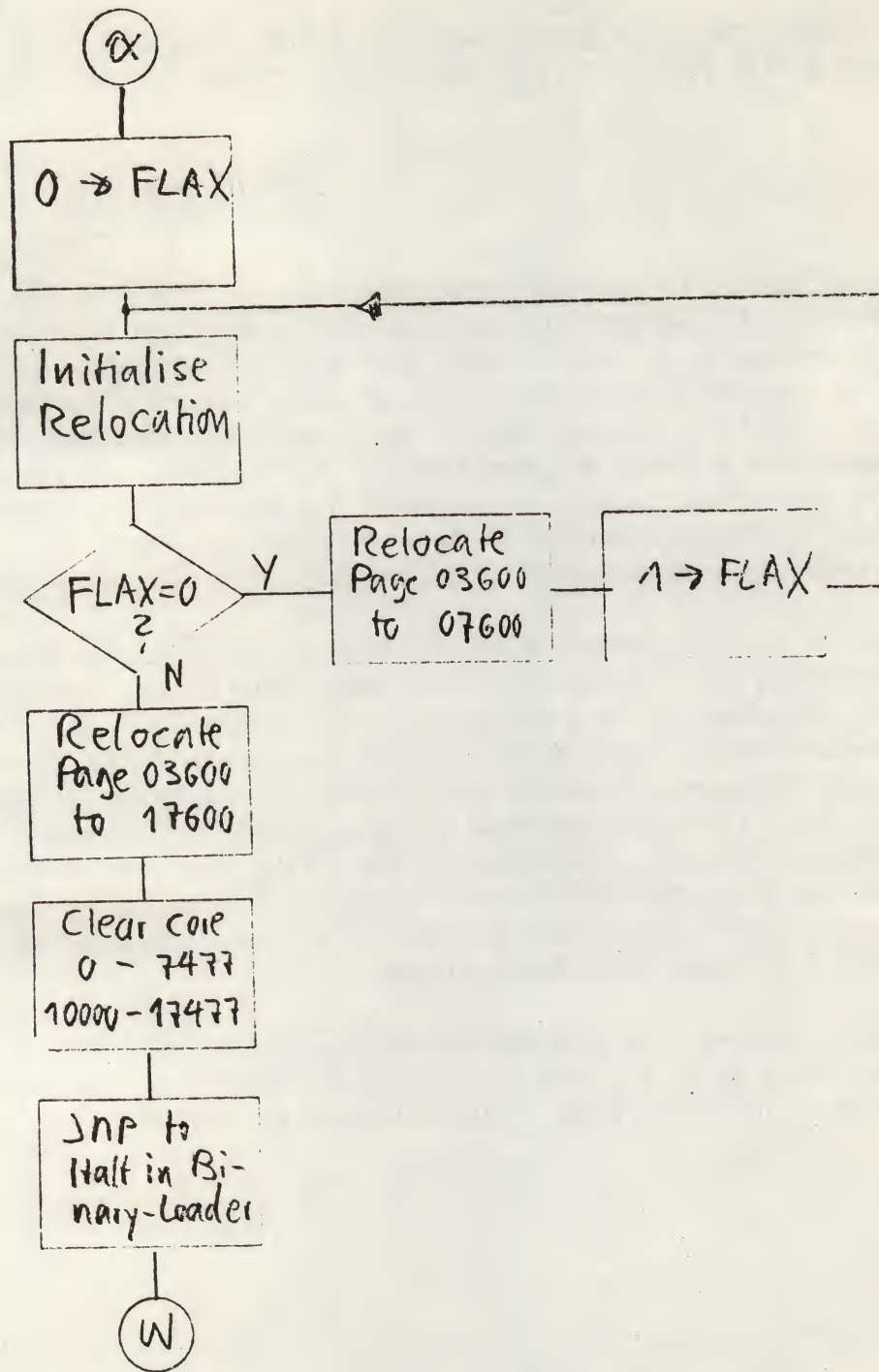


Fig. 1 Flow chart of the Program RIBLER
(RIN-Loader, BIN-Loader, Erase)

/ PROGRAM LOADING THE RIM- AND BIN-LOADERS
 / IN FIELD 0 AND 1 AND CLEARING THE
 / MEMORIES FROM ADDRESS 0 TO 7477.
 / HIGH-SPEED VERSION OF RIM-LOADER.
 / BIN-LOADER VERSION DEC-08-LBAA-D, MAY 10, 1967.
 / 9/18/71 E. P. LORETAN

	*3400		
3400	7300	START,	CLA CLL
3401	3236		DCA FLAX
3402	1241		TAD PL6201
3403	3214		DCA CHAFIE
3404	1243	START1,	TAD MI0200
3405	3233		DCA CTRX
3406	1240		TAD PL7600
407	3234		DCA PTRX
3410	1237		TAD PL3600
3411	3235		DCA PTRY
3412	6201	RELOC,	CDF 00
3413	1635		TAD I PTRY
3414	0000	CHAFIE,	0
			/ RELOCATION OF THE LOADERS / IN THE ORIGINAL POSITION
3415	3634		DCA I PTRX
3416	2234		ISZ PTRX
3417	2235		ISZ PTRY
3420	2233		ISZ CTRX
3421	5212		JMP RELOC
3422	1236		TAD FLAX
3423	7640		SZA CLA
3424	5231		JMP .+5
3425	2236		ISZ FLAX
3426	1242		TAD PL6211
3427	3214		DCA CHAFIE
3430	5204		JMP START1
3431	6212		CIF 10
432	5644		JMP I ILOE
			/ CLEARING OF THE CORES
3433	0000	CTRX,	0
3434	0000	PTRX,	0
3435	0000	PTRY,	0
3436	0000	FLAX,	0
3437	3600	PL3600,	3600
3440	7600	PL7600,	7600
3441	6201	PL6201,	6201
3442	6211	PL6211,	6211
3443	7600	MI0200,	-200
3444	7500	ILOE,	LOESCH

EJECT

/ BIN- AND RIM LOADERS, ASSEMBLED ON PAGE 3600

*3600

3600	7402	HLT	/ SAFETY HALTS
3601	7402	HLT	
3602	7402	HLT	
3603	7402	HLT	
3604	7402	HLT	
3605	7402	HLT	
3606	7402	HLT	
3607	7402	HLT	
3610	7402	HLT	
3611	7402	HLT	

*3612

3612	0000	SWITCH, 0
3613	0000	MEMTEM, 0
3614	0000	CHAR, 0
3615	0000	CHKSUM, 0
3616	0000	ORIGIN, 0

*3626

/EXTRACT ERRORS, FIELD, L/T

3626	0000	BEGG, 0	
3627	3212	DCA SWITCH	/ SET SWITCH
3630	4260	JMS READ	/ GET A CHARACTER
3631	1300	TAD M376	/ TEST FOR 377
3632	7750	SPA SNA CLA	
3633	5237	JMP .+4	/ NO
3634	2212	ISZ SWITCH	/ YES: COMPLEMENT SWITCH
3635	7040	CMA	
3636	5227	JMP BEGG+1	
3637	1212	TAD SWITCH	/ NOT 377
3640	7640	SZA CLA	/ IS SWITCH SET?
3641	5230	JMP BEGG+2	/ YES; IGNORE
3642	1214	TAD CHAR	/ NO; TEST FOR CODE
3643	0274	AND MASK	/ TYPES
3644	1341	TAD M200	
3645	7510	SPA	
3646	2226	ISZ BEGG	/ DATA OR ORIGIN
3647	7750	SPA SNA CLA	
3650	5626	JMP I BEGG	/ DATA, ORIGIN, OR L/T
3651	1214	TAD CHAR	/ FIELD SETTING
3652	0256	AND FMASK	
3653	1257	TAD CHANGE	
3654	3213	DCA MEMTEM	
3655	5230	JMP BEGG+2	/ CONTINUE INPUT
3656	0070	FMASK, 70	
3657	6201	CHANGE, CDF	
3660	0000	READ, 0	
3661	0000	0	
3662	6031	LOR, KSF	/ WAIT FOR FLAG

3663	5262		JMP	.-1
3664	6036		KRB	
3665	3214		DCA	CHAR
3666	1214		TAD	CHAR
3667	5660		JMP	I READ
3670	6011	HIR,	RSF	
3671	5270		JMP	.-1
3672	6016		KRB	RFC
3673	5265		JMP	LOR+3
3674	0300	MASK,	300	

/ TRAILER CODE SEEN

3675	4343	BEND,	JMS	ASSEMB
3676	7041		CIA	
3677	1215		TAD	CHKSUM
3700	7402	M376,	HLT	
3701	6032	BEGIN,	KCC	
3702	6014		RFC	
3703	6214		RDF	
3704	1257		TAD	CHANGE
3705	3213		DCA	MEMTEM
3706	7604		CLA	OSR
3707	7700		SMA	CLA
3710	1353		TAD	HIRI
3711	1352		TAD	LORI
3712	3261		DCA	READ+1
3713	4226		JMS	BEGG
3714	5313		JMP	.-1
3715	3215	GO,	DCA	CHKSUM
3716	1213		TAD	MEMTEM
3717	3336		DCA	MEMFLD
3720	1214		TAD	CHAR
3721	3376		DCA	WORD1
3722	4260		JMS	READ
3723	3355		DCA	WORD2
3724	4226		JMS	BEGG
3725	5275		JMP	BEND
3726	4343		JMS	ASSEMB
3727	7420		SNL	
3730	5336		JMP	MEMFLD
3731	3216		DCA	ORIGIN
3732	1376	CHEX,	TAD	WORD1
3733	1355		TAD	WORD2
3734	1215		TAD	CHKSUM
3735	5315		JMP	GO
3736	0000	MEMFLD,	0	
3737	3616		DCA	I ORIGIN
3740	2216		ISZ	ORIGIN
3741	7600	M200,	7600	
3742	5332		JMP	CHEX
3743	0000	ASSEMB,	0	
3744	1376		TAD	WORD1
3745	7106		CLL	RTL
3746	7006		RTL	
3747	7006		RTL	

/ SAVE FIELD INSTRUCTION

/ IGNORE LEADER

/ LOOK AHEAD

/ TRAILER, END

3750	1355		TAD WORD2	
3751	5743		JMP I ASSEMB	
3752	5262	LORI,	JMP LOR	
3753	0006	HIRI,	HIR-LOR	
3754	0000		0	
3755	0000	WORD2,	0	
3756	6014	BEG,	RFC	/ START-ADRESSE RIM-LOADER
3757	6011		RSF	
3760	5357		JMP --1	
3761	6016		RRB RFC	
3762	7106		CLL FTL	
3763	7006		RTL	
3764	7510		SPA	
3765	5374		JMP WORD1-2	
3766	7006		RTL	
3767	6011		RSF	
3770	5367		JMP --1	
3771	6016		RRB RFC	
3772	7420		SNL	
3773	3776		DCA I WORD1	
3774	3376		DCA WORD1	
3775	5357		JMP BEG+1	
3776	0000	WORD1,	0	
3777	5301		JMP BEGIN	/ START ADRESSE BIN-LOADER

		FIELD 1		
		*7500		
7500	3324	LOESCH,	DCA FLAY	/ LOESCHUNG DER SPEICHER
7501	1321		TAD CONST	
7502	3322		DCA CTR	
7503	3323		DCA PTR	
7504	3723	LOOP,	DCA I PTR	
7505	2322		ISZ CTR	
7506	7410		SKP	
7507	5312		JMP CHANGI	
7510	2323		ISZ PTR	
7511	5304		JMP LOOP	
7512	1324	CHANGI,	TAD FLAY	
7513	7640		SZA CLA	
7514	5720		JMP I IENDE	
7515	6201		CDF 00	
7516	2324		ISZ FLAY	
7517	5301		JMP LOESCH+1	
7520	7700	IENDE,	7700	/ HALT IM BIN LOADER
7521	0300	CONST,	-7500	
7522	0000	CTR,	0	
7523	0000	PTR,	0	
7524	0000	FLAY,	0	